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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/815,026

03/31/2004

Rajesh V. Mehta

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05/08/2006

Paul A. Leipold
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

PARKER, FREDERICK JOHN

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,026

Applicant(s)

MEHTA ET AL.

Examiner

Frederick J. Parker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/14/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title is too generic for the specific subject matter of the claims.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 2, 4-9, 11, 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 6-10, 14, 17, 18 of copending Application No. 10/815010. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 are essentially identical except that of '010 cites the fluid is in a gaseous state before or beyond discharge which necessarily occurs in 1 (iii) of the instant claim 1, and further '010 cites selectively depositing a pattern of particles

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which is an obvious variation of the instant application which recites depositing a uniform layer of particles because (1) a uniform pattern is in essence a pattern if desired, and (2) conventional masking of a substrate while uniformly depositing a coating results in selectively depositing a pattern of particles as would have been obvious to one skilled in the art. Claims 2,6-10,14,17,18 of '010 are analogous to claims 2,4-9,11,12 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 1,4,5-9,11,13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,9-18 of copending Application No. 10/814354. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of '354 is a combination of instant claims 1,4 & 9 to form a obvious variation of the method; claims 9-18 of '354 are analogous to, or obvious variants of, claims 7,8,5,6,4,11,13 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-3,10-12,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers US 4970093 in view of Wilson et al EP 0 473 424.

Sievers discloses a method for particle coating substrates, one embodiment comprising mixing a supercritical fluid (= compressed fluid per claim 2) with a solvent solution comprising a chemical reagent (e.g. metal chelate in MeOH) to produce smaller and more consistent particles (col. 7, 50- col. 8,11), which is then passed through a restrictor orifice or nozzle where fine sized particles are discharged towards a substrate on which a coating of a desired material is formed. The top of column 4 provides one skilled in the art with guidance as to selection of solvents and supercritical fluid. It is apparent the solvent must be compatible, and potentially reactive, with

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the reagents dissolved therein, as well as soluble in the supercritical fluid to provide the benefit of homogenous formation of particles on a substrate once the supercritical fluid is expanded. Since solubility is stated to be a function of temperature and pressure, maintenance of these process variables in the reactor would have been obvious. The lesser solubility of coating precursor materials in supercritical fluids as opposed to intended solvents are disclosed on col. 4, 39-68, per claim 1(ii). While exhausting the fluid, solvent, and reagent (“desired substance”) from the vessel at a substantially equal rate to the addition of the components in the system is not expressly cited, it is the Examiner’s position that to do so would have been obvious to provide a continuous coating of uniform composition. Nonetheless the Examiner introduces Wilson et al which expressly teaches in the abstract and elsewhere a coating system comprising a supercritical fluid mixed with a coating solution or formulation which is dispensed by spray or other means (top page 8) to provide coatings with reduced solvent content, wherein a control system 109 modifies the supply of supercritical fluid and /or coating solution/ formulation in response to changes in the system to ensure the desired ratio of components are maintained for uniform deposition onto the substrate. Such guidance to provide the uniform coatings of Sievers would have been obvious to ensure the desired ratio of components are maintained for deposition onto the substrate, per claim 1 (iii). Wilson teaches such coating methods are also able to apply paints (= polymers with colorants/ dyes per claims 11-12), release agents, adhesives, “and other materials”.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Sievers by incorporating the teachings of Wilson et al regarding

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control of components in order to maintain deposition of the desired ratio of components for coating deposition onto the substrate.

9. Claims 4-9,13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers US 4970093 in view of Wilson et al EP 0 473 424 and further in view of Fulton US2003/0222019 .

Sievers and Fulton are cited for the same reasons previously discussed, which are incorporated herein. Controlling particle deposition electrostatically is not disclosed.

Fulton et al teaches a similar method for applying particles onto substrates using supercritical fluids, and further adds electrodes 9,12 to form charged particles which are the electrostatically attracted to the substrate. Like the prior art, the apparatus compromises a heated/ pressurized vessel 3 which receives and mixes via any known mixing techniques [0041], including impellers, the supercritical solvent and reactant prior to discharging the solution through nozzle 8, the end of which is coupled to electrode/s to charge expelled particles [0042-43]. Substances or precursors thereof which may be applied are cited in [0031] to include polymers, dyes, pharmaceuticals, inorganic materials, etc encompassing materials to make organic electroluminescent devices per claim 13. Electrode type may be corona , tribocharging, induction, etc [0022] per claim 15. The motivation to incorporate electrostatic charging is to achieve adherent coating of substrates with nano-particles, with the coating having a deposition resolution better than 50 nm. The reference also teaches that nano-sized particles are generated by rapid expansion of supercritical fluids in such coating systems [0023], citing particle sizes less than 1 micron, and specifically 20-200 nm, which overlaps the ranges of claims 4,7,8. The

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subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the particle sizes disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90. Variation of particle size distribution would have been a function of process parameters and Sievers (see above) has already recognized that the particle sizes formed under supercritical spraying are consistent, so narrow particle size distributions would have been expected in the combined process of the prior art, per claims 5-6. Similarly, since particle sizes are the same or similar, roughness of the film product would have been expected to be the same or similar because roughness is a function of the particle size of the coating particles per claim 16.

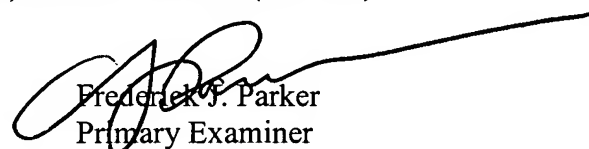
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the coating process of Sievers in view of Wilson by incorporating electrostatic charging as taught by Fulton et al to provide the advantage of electrostatically applying nano-sized particles onto substrates with a high degree of deposition resolution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Frederick J. Parker
Primary Examiner
Art Unit 1762

fjp